Supplementary Data

Using Biological Atomic Force Microscopy to Image Gold-Labeled Liposomes at Human Coronary Artery Endothelial Cell Membranes

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Experiments conducted on control cells (uncoupled liposomes).

The internalization process of standard liposomes (FITC-labeled liposomes) was investigated in HCAECs using the AFM technique. The results of preliminary experiments demonstrated that FITC-liposomes (uncoupled liposomes) were not visible to the AFM technique. The Figure S1 is a typical representation of the cell topography after incubation with FITC-liposomes. We observed that the utilization of a contrast agent (colloidal gold particles) efficiently improved the detection of liposomes within the cell membrane. In this paper we describe a potential method to track biomolecules in complex systems using 90 nm colloidal gold nano-particles to resolve AFM imaging.

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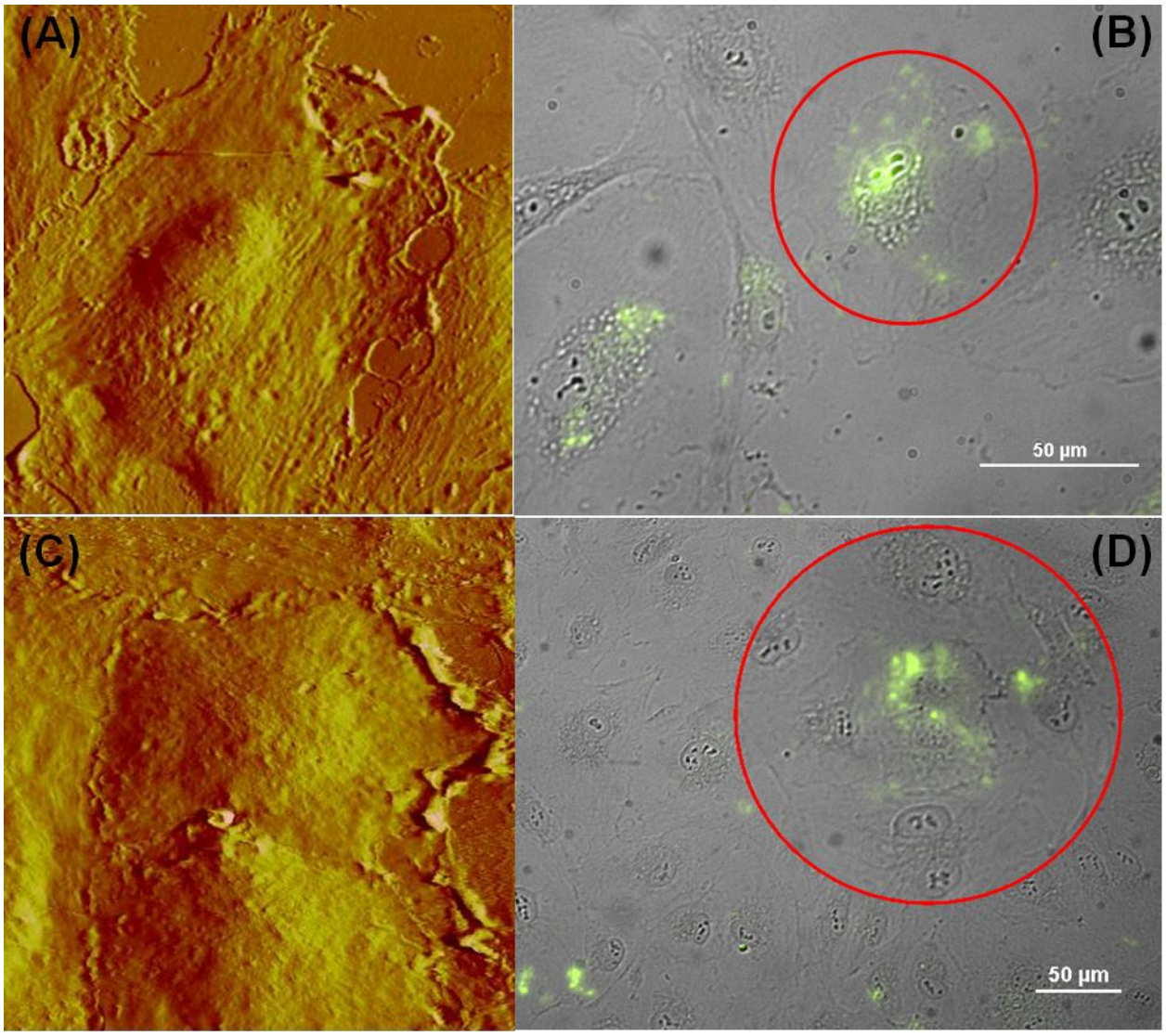

Figure S1. HCAECs incubated with FITC labeled liposomes (non-gold coupled) for 30 min (A and B) and 60 min (C and D). The cells with positive signaling in the bright-field images (circles in the right-hand panels) were selected for AFM scanning. The fluorescence images (B and D) showed that the FITC liposomes were randomly dispersed on the cell membrane. AFM imaging (A and C) demonstrated smooth membrane surfaces. FITC-liposomes were not visualized on HCAECs treated with uncoupled liposomes for 30 (A) and 60 min (C). Cells fixed in formalin 10% and scanned at 70 (A) and 60 μm^2 (C) in contact mode in liquid (DNP-S f*o*=12-24 kHz, *k*=0.06 N/m).